

### REMARKS

Applicants have carefully reviewed and considered the Office Action mailed on March 13, 2003, and the references cited therewith. Claims 1-3 and 27-29 were amended to more fully point out what Applicants regard as claimed embodiments. No new matter was added by this amendment. Support for this amendment comes from the specification at page 9, line 5 (regarding exchanging "additional" for --second-- with respect to the second dielectric layer 126), and at page 9, lines 17 (regarding the at least one second conductive trace 132).

Claims 1-3, 27-29, 32-34, and 38-39 are amended; as a result, claims 1-4 and 24-40 are now pending in this application.

### §102 Rejection of the Claims

Claims 1-3 and 25-29, 31-34 and 37 were rejected under 35 USC § 102(b) as being anticipated by Chung (U.S. 6,288,905). The Applicants respectfully traverse the rejection and request the Office to consider the following.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), M.P.E.P. §2131, 8<sup>th</sup> Ed.).

The Office Action mistakenly asserts "at least one conductive trace 134, 132, 110 (col. 10, line 40-50 . . .) is shown disposed on said first dielectric and in electrical contact with said active surface . . ." (Office Action, at page 2). Claim 1 requires "at least one first conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface . . ." Chung's trace (metal layer 110) is in electrical contact with Chung's "via conductor 132b" and not with the active surface. Further, Chung's via conductor 132b is in electrical contact with Chung's "oxidation-resistant material 134b" and not with the active surface. Even further, Chung's oxidation-resistant material 134b is in electrical contact with Chung's "bump 144" and not with the active surface. It is only Chung's bump 144 that is in electrical contact with Chung's active surface at the "contact pad 142b".

Applicants respectfully assert the structure of Chung includes three junctions and four elements, which originates with the metal layer 110, which includes the via conductor 132b,

which further includes the oxidation-resistant metal 134b, and which terminates at Chung's active surface with the bump 144. Applicants respectfully assert the first conductive trace in claim 1 is a single structure with no junctions, as supported by the specification, and as supported by the definition provided by the Office. This accomplishes

at least one first conductive trace (singular) disposed on said first dielectric material layer and in electrical contact (point of junction) with said microelectronic die active surface

(Claim 1, comments added). Applicants respectfully assert these two structures are significantly different. Where the Office maintains each element in Chung is a "trace", Chung teaches that these elements are, respectively, a "metal layer 110", a "via conductor 132b", an "oxidation-resistant metal 134b", and a "bump 144". Even Chung uses the phrase "contacts 114 . . . are electrically connected to at least one of via conductors 132a . . ." (Chung at column 4, lines 62-65).

The Office Action attempts to construe two elements into a form that is repugnant to ordinary usage and logic. First, a "trace" is well known to be

trace 1. A line or "wire" of conductive material such as copper, silver or gold, *on the surface* of or *sandwiched* inside a PCB, printed circuit board. These traces are often called individually a run. Traces carry an electronic signal or other forms of electron flow from one point to another. Traces that are *on the surface* of a board are covered with a non-conductive coating, except at *contact* or solder points, to keep unintentional contact from being made with other conductive surfaces.

(Computer, Telephony & Electronics Industry Glossary

<http://www.csgnetwork.com/glossaryt.html>, cited by the Office, emphases added). Applicants note that the examples in this definition include phrases: "on the surface of or sandwiched inside", which indicate significant lateral dimensions. Second, "in electrical contact" is well known to mean

contact 1. A point of *junction* in an electrical circuit. By mechanical or electrical means, they can be switched, on or off, closed or open. Contacts that when "closed" connect a pair of wires together and disconnects the wires when "open". A doorbell button is a simple example of a momentary contact closure.

("Computer, Telephony & Electronics Industry Glossary"

<http://www.csgnetwork.com/glossaryc.html>, provided by the Office, emphasis added). Third,

regarding the claim terminologies, "conductive trace" and "in electrical contact with", Applicants direct the Office to M.P.E.P. §2173.01 Claim Terminology.

A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art.

(M.P.E.P. §2173.01, 8th Ed., Rev. 1). Thus, Chung's "trace" (metal layer 110) is only "in electrical contact" with the "via conductor 132b". It is true, however, that Chung's "trace" (metal layer 110) may be electrically coupled to the active surface, but only through electrical contact with the "via conductor 132b", which is in electrical contact with the "oxidation-resistant material 134b", which is in electrical contact with the "bump 144", which finally (and solely) is in electrical contact with the active surface at the "contact pad 142b". Chung uses two phrases with respect to aspect of these relationships. First as set forth above, Chung states

... electrical contacts 114, e.g., 114a, 114b that are electrically isolated from each other by gaps 116 and that are electrically connected to at least one of via conductors 132a, 132b, 134.

(Chung at column 4, lines 62-65). Applicants note that Chung uses "electrically connected" and does not use the terminology "in electrical contact". Second, Chung states

[a]n electronic device 140, such as a semiconductor die, an integrated circuit or a network of resistive, inductive and/or capacitive elements, or the like, is *attached* to metal layer 110 and dielectric 120.

(Chung at column 5, lines 12-15, emphases added). Applicants note that Chung indicates his electronic device 140 is attached to his dielectric 120. Applicants further note that the Office Action errantly used this citation by truncating Chung's sentence. The Office asserted thereby that Chung's term "attached" (Chung, Office Action at pages 6 and 7) means "in electrical contact with" (claim 1). But when this passage is read from Chung, as set forth above, it is clear Chung's meaning is generic and not electrical. Certainly the Office does not mean to indicate Chung is using the phrase "device 140 . . . is attached to . . . dielectric 120" as equivalent language to "in electrical contact with" as set forth in claim 1.

Because each and every element of claim 1 is not taught by Chung, withdrawal of the rejection is respectfully requested.

Claim 2 adds the limitation of "at least one second dielectric material layer disposed over said at least one first conductive trace". The Office Action asserts a "dielectric 120 is shown disposed over said one trace." (Office Action, page 2). The Office Action is mistaken. The dielectric 120 simply is not disposed over the "trace" (metal layer 110), unless one views Chung's patent document upside-down. This requires both physically and literally twisting Chung's meaning. Even where the Office action has misconstrued the trace as including "the via conductor 132b" or the "oxidation-resistant material 134b", the "dielectric 120" is not disposed over the conductive trace, but perhaps "next to" or "at", etc. Finally, where the dielectric 120 may be disposed over the bump 144, it is repugnant to ordinary usage to construe a bump as a trace. Because each and every element of claim 2 is not taught by Chung, withdrawal of the rejection is respectfully requested.

Claim 3 adds the limitation that "at least a portion of at least one second conductive trace extends through and resides on said at least one second dielectric material layer." The Office Action asserts that the "via conductor 132b" is the trace. But this assertion is a mistake as set forth above. In any event, the "dielectric material 120" is not above the "trace" (metal layer 110). Because each and every element of claim 3 is not taught by Chung, withdrawal of the rejection is respectfully requested.

The Office Action asserts that Chung further teaches what is claimed at Figure 14. The Office Action is mistaken. Chung confirms that, other than the connectors 160, it is "otherwise similar to contact module 100 of FIG. 6 in construction and materials . . ." (Chung at column 11, lines 57 et seq.) Even if Chung at Figure 14 could be construed to include the conductor 160 as the trace as claimed by Applicants, the conductor 160 suffers from the same defect of not being in electrical contact with the microelectric die active surface (see Figure 13), as the conductor 160 is in electrical contact with the "via conductor 132b" which in turn is in electrical contact with the "bump 144", which alone is in electrical contact with the active surface. Because each and every element of what is claimed is not taught by Chung, withdrawal of the rejection is respectfully requested.

Regarding claim 26, Chung utterly fails to teach the limitation "encapsulation material includes. . . at least one surface planar to said microelectronic die back surface." Because each and every element of claim 26 is not taught by Chung, withdrawal of the rejection is respectfully

requested. Because claims 27-29 depend from claim 26, withdrawal of their rejections is also respectfully requested.

Regarding claim 31, Chung also fails to teach the encapsulation material is "substantially planar to said plurality of microelectronic dice active devices" (claim 31). This can be verified by review of FIGS. 13 and 14 where the encapsulation material (not present in FIG. 13) would fill to a level above the active surface, and where the encapsulation material (not labeled in FIG. 14) can possibly be construed to be substantially planar to the active surface of die 140 on the left edge, but nowhere else by virtue of the presence of the conductor 160 in that position. Because each and every element of claim 31 is not taught by Chang, withdrawal of the rejection is respectfully requested. Because claims 32-34 and 37 depend from claim 31, withdrawal of their rejections is also respectfully requested.

Claims 1, 26, 27, 31 and 32 were also rejected under 35 USC § 102(b) as being anticipated by Fordemwalt et al. (U.S. 3,407,479). In the Office Action, claims 1, 26, 27, 31, and 32 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fordemwalt (U.S. 3,407,479). The Applicants respectfully traverse the rejection and request the Office to consider the following.

Regarding claim 1, Fordemwalt fails to teach at least one limitation of claim 1, "at least one first conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface". Fordemwalt also fails to teach at least one limitation of claim 1, "wherein said at least one first conductive trace extends adjacent said microelectronic die active surface". Fordemwalt also fails to teach at least one limitation of claim 1, "wherein said at least one first conductive trace extends . . . adjacent said encapsulation material surface". Because each and every element as set forth in claim 1 is not found, either expressly or inherently described, in Fordemwalt, withdrawal of the rejection is respectfully requested.

Regarding claim 26, Fordemwalt utterly fails to teach the limitation "encapsulation material includes. . . at least one surface planar to said microelectronic die back surface." Because each and every element of claim 26 is not taught by Fordemwalt, withdrawal of the

rejection is respectfully requested. Because claim 27 depends from claim 26, withdrawal of its rejection is also respectfully requested.

Regarding claims 31 and 32, Fordemwalt fails to teach at least the limitation, "at least one conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface". Fordemwalt also fails to teach at least the limitation "wherein said at least one conductive trace extends adjacent said microelectronic die active surface". Because each and every element is not found, either expressly or inherently described, in Fordemwalt, withdrawal of the rejection is respectfully requested.

In the Office Action, claims 1, 26, and 27 were rejected under 35 U.S.C. § 102(a) as being anticipated by Nishihara et al. (U.S. 6,013,953). The Applicants respectfully traverse the rejection and request the Office to consider the following.

The Office Action cites to an "encapsulation 18" (Office Action, page 3) that does not exist in Nishihara et al. The only reference to the numeral 18 is with respect to "18 pieces of copper" (Nishihara et al. at col. 7, line 11). Because the rejection is incomprehensible, it should be withdrawn.

The other limitations cited in the Office Action may describe what is disclosed in Nishihara et al., but claim 1 requires "at least one first conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface . . . ." Nishihara's trace (copper through-hole 5) is not disposed on the first dielectric material (adhesive 3). Further, Nishihara's trace is not in electrical contact with the active surface, rather with a "connection terminal 9" that is prominent from the active surface. Because the rejection is incomprehensible, and because each and every element as set forth in claim 1 is not found, either expressly or inherently described, in Nishihara et al., withdrawal of the rejection is respectfully requested.

Regarding claim 26, Nishihara et al. utterly fail to teach the limitation "encapsulation material includes. . . at least one surface planar to said microelectronic die back surface." Because each and every element of claim 26 is not taught by Nishihara et al., withdrawal of the rejection is respectfully requested. Because claim 27 depends from claim 26, withdrawal of its rejection is also respectfully requested.

Claims 1, 4, 24, 26, 27, 30, 31, 32, 35, 36, 38 (sic), 38-40 were also rejected under 35 USC § 102(b) as being anticipated by Donovan et al. (U.S. 3,343,255).

The Office Action cites to a "first dielectric 123" (Office Action, page 4) that does not exist in Donovan. Because the rejection is incomprehensible, it should be withdrawn.

The Office Action incorrectly refers to a "trace 32" that in fact is no more and no less than an "ohmic contact 32". The ohmic contact 32 cannot be construed to be a trace as claimed, let alone to have the limitations of the trace as claimed. Because each and every element of claim 1 is not taught by Donovan, withdrawal of the rejection is respectfully requested.

Claims 4 and 24 depend from claim 1 and are therefore not anticipated. Further, Donovan fails to teach the limitation of claim 24, particularly the limitation the "said encapsulation material is adjacent at least a portion of said at least one heat dissipation device." Withdrawal of the rejections is respectfully requested.

Regarding claim 26, Donovan utterly fails to teach the limitation "encapsulation material includes . . . at least one surface planar to said microelectronic die back surface." Because each and every element of claim 26 is not taught by Donovan, withdrawal of the rejection is respectfully requested. Because claims 27 and 30 depend from claim 26, claims 27 and 30 are also not anticipated and withdrawal of the rejections is also respectfully requested.

Regarding claims 31 and 32, Donovan fails to teach at least the limitation, "at least one first conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface". Donovan also fails to teach at least the limitation "wherein said at least one first conductive trace extends adjacent said microelectronic die active surface". Because each and every element is not found, either expressly or inherently described, in Donovan, withdrawal of the rejection is respectfully requested. Because claims 32, 35, and 36 depend from claim 31, withdrawal of their rejections is also respectfully requested.

Regarding claims 38-40, Donovan fails to teach at least the limitation, "at least one first conductive trace disposed on said first dielectric material layer and in electrical contact with said microelectronic die active surface". Donovan also fails to teach at least the limitation "wherein said at least one first conductive trace extends adjacent said microelectronic die active surface". Because each and every element is not found, either expressly or inherently described, in

Donavan, withdrawal of the rejection is respectfully requested. Because claims 39, and 40 depend from claim 38, withdrawal of their rejections is also respectfully requested.

Rejections Under 35 U.S.C. § 103

In the Office Action, claims 4, 24, 35, and 36 were rejected as being unpatentable over previously cited references. The Applicants respectfully traverse this rejection and requests the Office to consider the following.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8<sup>th</sup> Ed).

In addition, the Federal Circuit has held that "If the examination at the initial stage does not produce a prima facie case of unpatentability, then without more the applicant is entitled to grant of the patent. *In re Oetiker*, 24 USPQ 2d 1443, 1444 (Fed. Cir. 1992).

The Applicants incorporate all the discussion regarding the inadequacy of the previously cited references to teach each and every element of what is claimed.

The Office Action admits that Chung and Fordemwalt et al. do not teach a heat dissipation device. However, what teaching Donovan et al. adds to teach a heat dissipation device, does not amount to a teaching or suggestion of all the limitations of claims 4, 24, 35, and 36 as set forth in this Reply. Further, where heat dissipation (or heat dissipation at all, for that matter) is not mentioned in Chung and/or Donovan et al., the Office Action has used the Applicants' disclosure as a guide to make the claimed combination. Withdrawal of the rejections is respectfully requested.

In the Office Action at page 5, claims 1-4 and 24-37 were rejected. Because the statutory basis for this rejection was not stated, neither was a reasoned statement of rejection offered, the



rejection is incomprehensible and the rejection should be withdrawn. (M.P.E.P. §707.07(d) ). In M.P.E.P. §707.07(d), it states, "[t]he examiner should designate the *statutory basis* for any ground of rejection by express reference to a section of 35 U.S.C. in the opening sentence of each ground of rejection." (Underlined emphasis added).

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, John N. Greaves at (801) 278-9171 or Applicants' below-named attorney at (612) 373-6970 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

Respectfully submitted,

QING MA ET AL.

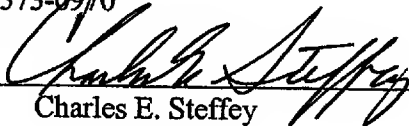
By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
Attorneys for Intel Corporation  
P.O. Box 2938  
Minneapolis, MN 55402  
612-373-6970

Date

June 13, 2003

By



Charles E. Steffey  
Reg. No. 25,179

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